

**Preliminary Amendment filed May 11, 2005  
U.S. Patent Application Serial No. 10/641,144**

**IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended): A process comprising steps of hot piercing and hot rolling for producing a high strength seamless steel pipe, having excellent sulfide stress cracking resistance, characterized by using a billet of low alloy steel which contains, in weight %, 0.15-0.50% of C, 0.1-1.5% of Cr, 0.1-1.5% of Mo, 0.005-0.50% of Al, 0.005-0.50% of Ti and 0.003-0.50% of Nb, and comprising the followings steps:

(1) hot piercing the billet into a hollow shell,

(2) hot rolling the hollow shell with 40% or more of cross sectional reduction ratio,

(3) finishing the hot rolling in a temperature range of 800-1100°C.,

(4) putting the manufactured steel pipe promptly in a complementary heating apparatus after the finish rolling, and complementarity heating at the temperature and time satisfying the following formula (a),

(5) quenching the steel pipe immediately after taking out of the complementary heating

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apparatus, and

(6) tempering the pipe at a temperature not higher than the  $A_{c1}$  transformation point as the last heat treatment,

$$23500 \leq (T+273) \times (21 + \log t) \leq 26000 \quad (a)$$

where,  $T$  ( $^{\circ}\text{C}$ ) is a temperature of not lower than  $850^{\circ}\text{C}$ , and  $t$  is a time (hr).

2. (Original): A process for producing a high strength seamless steel pipe, having excellent sulfide stress cracking resistance according to claim 1, characterized by further comprising one or more times intermediate heat treating which consists of quenching or combination of quenching and tempering, between the above-mentioned quenching step (5) and the last heat treatment step (6).

3. (Currently Amended): A process for producing a high strength seamless steel pipe, having excellent sulfide stress cracking resistance according to claim 1 or claim 2, characterized by using the steel billet which consists essentially of, in weight %, 0.15-0.50% of C, up to 1.5% of Si, up to 1.5% Mn, 0.1-1.5% of Cr, 0.1-1.5% of Mo, 0.005-0.50% of Al, 0.005-0.50% of Ti, 0.003-0.50% of Nb, up to 0.010% of N, up to 0.01% of O, up to 0.05% of P, up to 0.01% of S, up to 0.1% of Ni, up to 0.5% of V, up to 0.5% of Zr, up to 0.01% of B, up to 0.01% of Ca, up to 2.0% of W, and the

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balance of Fe and incidental impurities, and each amount of Ti, Zr and N is defined by the following formula (b).

$$\text{Ti}(\%) - (48/14) \times \{ \text{N}(\%) - (14/91) \times \text{Zr}(\%) \} \geq 0 \quad (b)$$

4. (Original): A process for producing a high strength seamless steel pipe, having excellent sulfide stress cracking resistance according to claim 3, wherein the steel billet further contains 0.05-0.5 weight % of V.

5. (Original): A process for producing a high strength seamless steel pipe having, excellent sulfide stress cracking resistance according to claim 3 or claim 4, using the steel billet in which Si content or Mn content is not more than 0.1 weight % respectively, or both of Si content and Mn content are not more than 0.1 weight %.

6. (Original): A process for producing a high strength seamless steel pipe, having excellent sulfide stress cracking resistance according to claim 3, or claim 4, using the steel billet in which P as an impurity is not more than 0.005 weight %, or S as an impurity is not more than 0.0007 weight %, or P as an impurity is not more than 0.005 weight % and S as an impurity is not more than 0.0007 weight %.

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7. (Original): A process for producing a high strength seamless steel pipe, having excellent sulfide stress cracking resistance according to claim 5, using the steel billet in which P as an impurity is not more than 0.005 weight %, or S as an impurity is not more than 0.0007 weight %, or P as an impurity is not more than 0.005 weight % and S as an impurity is not more than 0.0007 weight %.